

SOUND AND MOVEMENT: THE ETERNAL DANCE THAT FACILITATES WHOLE-BRAIN LEARNING

Presented by Carmen Montoto



[Carmen María Montoto](#) graduated from the University of Puerto Rico with a BA in History of Art. She also studied Home Design, Kinesiology (level I), Photo Reading and Ayurveda Massage and is a Hado Instructor, Brain Gym and TMI Outreach Facilitator. Carmen has offered conferences in Iceland, Boston Latino Institute, TMI, Cuba and Puerto Rico about Hemi-Sync® and its uses.

As a Member of the Professional Division, with nine university students, she generated a research project on the use of Hemi-Sync to enhance learning. With Jacqueline Mast, she organized the International Conference on Special Education in Puerto Rico.

We all know the power of Hemi-Sync by itself. During the Professional Seminar, Carmen Montoto demonstrated the power of Hemi-Sync when combined with other tools. Since 2007, Carmen Montoto has collaborated with several universities in Puerto Rico, investigating in elementary schools the effects of sound and movement to enhance cognitive functions and facilitate whole-brain learning. The research has used combinations of Hemi-Sync, the educational kinesiology of Brain Gym®, and affirmations. The sounds used are Hemi-Sync frequency patterns, and the movements are the Brain Gym exercises. During her presentation, Professional Seminar members practiced some of the Brain Gym exercises used in the research.

Key to the exercises is the role of the inner ear, which combines sound and balance. Montoto starts with this description:



Carmen leading participants in a Brain Gym exercise.



“You can separate sound from movement; in the music of their eternal dance, matter is created and transformed. Nature in its perennial wisdom re-creates this in the brain. Entirely embedded in bone is the labyrinth of the inner ear, where sound and movement are processed together. They are part of the vestibular-cochlear system considered by Dr. Alfred Tomatis as the dynamo of the brain and the threshold to whole-brain learning.”

Brain Gym is applied educational kinesiology, which was created by Paul Dennison, Ph.D., and Gail Dennison. Brain Gym consists of twenty-six exercises and activities committed to the principle that moving

with intention leads to optimal learning. Some of the exercises recall the movements naturally done during the first years of life when learning to coordinate the eyes, ears, hands, and whole body. Teachers and students have been reporting for over twenty years on the effectiveness of these simple activities. They often bring about dramatic improvements in such areas as reading, writing, math, test taking, physical coordination, concentration, focus, memory relationships, self-responsibility, attitude, and organization skills. Ms. Montoto used the triune brain model of Paul MacLean to explain the three dimensions in which the exercises are categorized: Focus (reptilian brain), Organization (mammalian brain), and Laterality (neocortex).

HISTORY OF THE RESEARCH

In 2007, the first of these projects was done in nine elementary schools by nine masters-degree students of the Ponce Catholic University, under the supervision of Professor Ruth Reyes, Ph.D. The results of their thesis proved that the Hemi Sync sounds enhanced the learning environment in all of the classrooms.

The second study was conducted in 2009 by Marilyn Felix, a doctoral-degree student from the Metropolitan University of Cupey (UMET). Her work showed that the results of earlier studies in several schools in Puerto Rico—using Hemi Sync and Brain Gym to enhance the learning environment and improve reading—could be verified and duplicated. Students had an improvement of 52% in their oral reading based on the standardized test that was repeated in 2010, the day they gave the standardized test called *La Prueba Puertorriqueña* that determines the level the school is placed in. The whole school practiced several Brain Gym exercises in the courtyard, plus in all the classrooms they had Hemi-Sync music playing while taking the test. The school had a 10% improvement from the previous year with one-day exposure to Hemi-Sync.

A third research project, by Joaquin Cotto, a speech pathology student, studied how Hemi-Sync improved the communication of children with autism. All the children were using Hemi-Sync and doing Brain Gym exercises. The results of his thesis were very positive.

THREE DIMENSIONS OF NEUROLOGICAL ORGANIZATION IN LEARNING	
FOCUS:	referring to the connection between the back of the brain (<i>brain stem</i>) and the frontal lobes . This helps people to know their missions in life and to keep their attention on the task. It allows one to work on the big picture as well as on the details simultaneously.
CENTERING:	referring to the connectors between the top and bottom parts of the brain, specifically the neocortex and the limbic system. This is also known as the mind/heart connection. These two parts of the brain, when working together, allow us to temper our emotions with reasoning, to get organized, and to integrate new information with existing knowledge.
LATERALITY:	relates to the neurological connections between right and left brain. When both of these parts are working together, vision and hearing are enhanced, movements are coordinated and graceful, and skills such as reading and writing become easier.

The Focus dimension is the first to be developed by Brain Gym. Objective of this dimension is to meet the individual's organic need to feel: I AM SAFE!

Brain Gym in the <i>FOCUS</i> dimension		
Determines	Functions	Brain Gym® Movements
<ul style="list-style-type: none"> Attention Where I am in space Lengthening activities 	<ul style="list-style-type: none"> Seeing, participating, comprehending Autonomous functions Opens and shuts access to higher reasoning Freeze, fight, or flight Connects to vestibular system 	<ul style="list-style-type: none"> Owl Arm Activation Foot Flex Gravity Glider Calf Pump Grounder

Second is the Centering dimension. Objective is to facilitate one's abilities for CONNECTION!

Brain Gym in the <i>ENTERING</i> dimension		
Determines	Functions	Brain Gym® Movements
<ul style="list-style-type: none"> • Emotional intelligence • Where I am in relation to others • Energy exercises 	<ul style="list-style-type: none"> • Stability, organizing, feeling • Converts short-term memory to long-term memory • Generates pleasure/anxiety response • Releases hormones • Interactions 	<ul style="list-style-type: none"> • Drink Water • Energy Yawn • Space Buttons • Earth Buttons • Brain Buttons • Balance Buttons

Third is the Laterality dimension. Objective of this dimension is to validate: I KNOW WHO I AM!

Brain Gym in the <i>LATERALITY</i> dimension		
Determines	Functions	Brain Gym® Movements
<ul style="list-style-type: none"> • Higher levels of reasoning • Analysis and communications • Midline movements 	<ul style="list-style-type: none"> • Thinking, processing, communicating • Interprets all senses • Allows complex memory/thought/reason • Language acquisition • Expression (verbal, nonverbal, written) 	<ul style="list-style-type: none"> • Alphabet Eight • Neck Rolls • Think of an X • Energizer • Cross Crawls • Elephant

The Focus dimension is the first to be developed by Brain Gym. Objective of this dimension is to meet the individual's organic need to feel: I AM SAFE!

Second is the Centering dimension. Objective is to facilitate one's abilities for CONNECTION!

Third is the Laterality dimension. Objective of this dimension is to validate: I KNOW WHO I AM!

The following benefits observed by researchers and teachers explains why the combination of Brain Gym and Hemi-Sync is so effective:

- They are excellent examples of whole-brain learning, used by teachers in the classroom and by students at home.
- They facilitate the communication between different parts of the brain.
- Hemi-Sync synchronizes the brain hemispheres through sound. Brain Gym activates both hemispheres through cross lateral movements.

- They can be used individually (by the student) or collectively (in a classroom). They help both teachers and students to focus more efficiently on their work, supporting accelerated learning.
- They are cost effective and very simple to use.
- They improve memory, concentration, coordination, and balance.
- They use relaxation to activate the parasympathetic system, preparing the brain for higher cognitive functions.
- They facilitate sensory integration.
- They improve reading, writing, and math, and enhance creativity.
- They have research to validate their results (Hemi-Sync has 40 years, Brain Gym 20 years).
- They use visualization and positive affirmation, providing tools to help you achieve your goals. Hemi-Sync in the Human Plus Series and some Mind Food Exercises. Brain Gym in a Brain Gym Consultation Balance.
- They help athletes achieve peak performance in sports.
- They are excellent for children with special needs (dyslexia, ADD, ADHD, autism, etc.).

CONCLUSION

The children of the twenty-first century are growing up in a technological world that changes very fast. The skills we learn today might be obsolete tomorrow as the technology changes and new theories emerge. While rich in opportunities, the challenges it presents demand that we acquire tools and approaches that can help us relax, sleep, and learn faster.

LITERATURE

Dennison, Paul E. and Gail E. Dennison, *Simple Activities for Whole Brain Learning*. Ventura, CA: Edu-Kinesthetics, Inc. 1992:

Dennison, Paul E. and Gail E. Dennison, *Brain Gym: Teacher's Edition*. Ventura, CA: Edu-Kinesthetics, 1989

Dennison, Paul E. and Gail E. Dennison, *Brain Gym101: Balance for Daily Life*. Ventura, CA: Edu-Kinesthetics, 2007

Hannaford, Carla *The Dominance Factor: How Knowing Your Dominant Eye, Ear, Brain, Hand, & Foot Can Improve Your Learning*. Captain Cook, HI: Jamilla Nur Pub. 1997. Also published by Great River Books, Salt Lake City, UT.

Hannaford, Carla, *Smart Moves: Why Learning Is Not All in Your Head*. Captain Cook, HI: Jamilla Nur Pub. 2005

